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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,536	08/25/2003	Robert Owen Lockerbie	B0175-US02	4649
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EXAMINER				
LEE, JAE W				
ART UNIT		PAPER NUMBER		
1656				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/648,536

Applicant(s)

LOCKERBIE ET AL.

Examiner

JAE W. LEE

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/05/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-15, 17-19 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-15, 17-19 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Application status

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

In response to the previous Office action, a final rejection (mailed on 02/10/2009), Applicants filed an amendment to claims on 05/05/2009. Claims 1-11, 16, 20, 21 and 23 are canceled, and amended Claims 12-15, 17-19 and 22.

All of the previous objections and rejections have been withdrawn by virtue of Applicants' amendment.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-15, 17-19 and 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Goodrich et al.¹ (USPN 6,258,577) in view of Joshi PC (Comparison of the DNA-damaging property of photosensitised riboflavin via singlet oxygen (1O₂) and superoxide radical O₂⁻. Mechanisms, Toxicol Lett. 1985, 26(2-3):211-7).

Claims are drawn to [i] a process for inactivating white blood cells or pathogen-reduced blood or blood components which may be contained in a fluid comprising: adding to the fluid containing white blood cells an effective amount of riboflavin acting as a photosensitizer; exposing the fluid and riboflavin acting as a photosensitizer to light of an appropriate wavelength to activate the riboflavin acting as a photosensitizer and cause damage to the nucleic acid of the white blood cells wherein the light to expose the fluid and riboflavin acting as a photosensitizer is in the UVB range; and substantially maintaining the damage to the nucleic acids of the white blood cells; and [ii] a fluid suitable for transfusing in to a patient comprising red blood cells, platelets or plasma treated by said process.

Teachings of Goodrich et al. (formerly known as Goodrich¹ et al.) are as described in the previous office actions mailed on 02/06/2007, 10/18/2007, 09/04/2008 and 02/10/2009).

Goodrich et al. do not explicitly teach exposing the riboflavin in UVB range.

Joshi teaches that riboflavin can be activated by exposing to UV-A (320-400 nm) and UV-B (290-320 nm) light which in turn generates singlet oxygen (1O_2) and superoxide anion radicals O_2^- for riboflavin-sensitized photodegradation of the guanine base of DNA and RNA (see Abstract, for example).

It would have been obvious for one of skill in the art to make and use [i] a process for inactivating blood or blood components comprising red blood cells, white blood cells, platelets, plasma, bacteria and/or virus, said process comprising: exposing said blood or blood components and riboflavin acting as a photosensitizer to light in

UVB range to activate the riboflavin acting as a photosensitizer, and causing damage or fragmentation to nucleic acids of said blood or blood components, and [ii] a fluid treated according to said process as taught by Goodrich et al. and Joshi. One of skill in the art would have been motivated to make and use such inventions because the inactivation of said blood components is critical, especially for [1] donor white blood cells which can cause a series of severe immune responses in a transfusion recipient (as evidenced in Lee et al., From leukocyte reduction to leukocyte transfusion: the immunological effects of transfused leukocytes, Bailliere's Clinical Haematology, Vol. 13, No. 4, pp: 585-600, 2000), and [2] bacteria, viruses, and parasites which are potential sources of infection that have been transmitted by allogeneic transfusions. Furthermore, a skilled artisan would have been motivated to combine teachings of Goodrich et al. and Joshi because in order to activate riboflavin, one has to irradiate with UVA or UVB as taught by Joshi. Therefore, the claimed invention as a whole is *prima facie* obvious over the combined teachings of the prior art.

Conclusion

Claims 12-15, 17-19 and 22 are rejected for the reasons as stated above. Applicants must respond to the objections/rejections in this Office action to be fully responsive in prosecution.

The instant Office action is non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae W. Lee whose telephone number is 571-272-9949. The examiner can normally be reached on M-F between 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAE W LEE/
Examiner, Art Unit 1656

/SUZANNE M. NOAKES/
Primary Examiner, Art Unit 1656